

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A CO₂ incubator for incubating a culture medium comprising:
- a housing having an interior divided into at least two separate incubation spaces by a partition and a respective door for opening and closing entry into each of said incubation spaces;
 - CO₂ gas concentration detection means for detecting a CO₂ concentration in each of the plurality of incubation spaces,
 - air-agitating blower for agitating the air in the plurality of incubation spaces to make uniform the state of the air in each said space,
 - a measurement air sampling tube and a first multi-position valve for selectively communicating the air sampling tube with the inside of each of the incubation spaces,
 - a measurement air return tube and a second multi-position valve for selectively communicating the air return tube with the inside of the incubation spaces,
 - a pump for sucking a part of the air in the plurality of incubation spaces into the measurement air sampling tube, and returning the air to the incubation spaces through the measurement air return tube after being taken by the CO₂ gas concentration detection means,
 - CO₂ gas concentration setting means for setting a desired CO₂ gas concentration to be present in the incubation space,
 - CO₂ gas supply means and a valve apparatus for selectively supplying a CO₂ gas into each of the incubation spaces, and
 - a control means for controlling the CO₂ gas supply means ~~that operates each of said first, second and third multi-position valves to select the gas in any incubation space, detect the CO₂ gas concentration of the selected gas by the CO₂ gas concentration detection means, and control the supply of the CO₂ space to each incubation space in accordance with the detected CO₂ gas concentration by executing an operations~~ of proportion, proportion and integration, or proportion

and integration and differentiation on the basis of a deviation between the detected CO₂ gas concentration and the set CO₂ gas concentration value to calculate a CO₂ gas supply time per unit time to the incubation space and a stop time, wherein said proportion operation calculates a control amount in proportion to the deviation for reducing the deviation, said integral operation calculates a control amount for reducing an integrated value of the deviation, and said differential operation calculates a control amount for reducing a differentiated value of the deviation; and

the control means controls supply of CO₂ gas concentration in the incubation space as detected by said CO₂ gas concentration detection means and a set CO₂ gas concentration value set by said CO₂ gas concentration setting means to calculate a CO₂ gas supply time per unit time to the incubation space and a stop time, and to supply CO₂ gas to the incubation space from the CO₂ gas supply means in accordance with the calculated supply time and stop time.

2. (Original) The CO₂ incubator according to claim 1, wherein the CO₂ gas concentration detection means is constituted of a CO₂ sensor using infrared rays.

3. – 5. (Canceled)

6. (New) The CO₂ incubator according to claim 1, wherein a plurality of incubation spaces are disposed in the incubator and

the control means selects the gas in any incubation space, detects the CO₂ gas concentration of the selected gas by the CO₂ gas concentration detection means, and controls the supply of the CO₂ gas to each incubation space in accordance with the detected CO₂ gas concentration.